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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/699,435	10/31/2003	Winthrop D. Childers	10019416-7	2886

7590 02/27/2004

HEWLETT-PACKARD COMPANY
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EXAMINER	
KOVAL, MELISSA J	

ART UNIT	PAPER NUMBER
2851	

DATE MAILED: 02/27/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/699,435	CHILDERS ET AL.	
	Examiner	Art Unit	
	Melissa J Koval	2851	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-15,19,20 and 22-27* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-15,19,20,22-24,26 and 27* is/are rejected.

7)☒ Claim(s) *25* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *31 October 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-4, 10, and 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Choate ('009).

Refer to Figures 1 and 2 of Choate, for example.

Claim 1 sets forth: "An image projection system configured to enhance quality of an image on a screen, the system comprising:

an illumination source configured to produce light and direct light along an optical path (light source LS1) ; and

a time-varying focus device disposed in the optical path and configured to periodically alter focus of incident light to enhance quality of the image on the screen."

Refer to Figure 2 of Choate. See lenses 31, 32 and 33, supported by plates 35 and 36. Handle or knob 38' can be utilized for manually rotating shaft 38, thus providing a time-varying focus. Also refer to column 4, lines 15 through 67.

Claim 2 sets forth: "The image projection system of claim 1, wherein the time varying focus device is configured to periodically diverge light exiting the time-varying focus device." Refer to divergent lens 54 comprised by lens 31 as shown in Figure 3, for example. For the period of time that light exits 31 through divergent lens 54, Choate meets the language of claim 2.

Claim 3 sets forth: "The image projection system of claim 1, wherein the time varying focus device is configured to periodically converge light exiting the time-varying focus device." Refer to plano convex inlet lens 74 of Figure 5, for example. For the period of time that light exits 33 after passing through divergent lens 54, Choate meets the language of claim 3.

Claims 3, 4 and 10 are met by the figures 3, 4 and 5 wherein the three lenses 31, 32 and 33, respectively, are shown, because the claim language does not specify exactly, by means of structural and optical connections between light from the illuminations source as it passes through the time-varying focus device, where in the optical system convergence, divergence, or refraction takes place. Clearly lenses 31, 32 and 33, depending on their position of rotation by means of plates 35 and 36 alternately diverge and converge light as illumination passes through the lens system.

With respect to claim 14, lenses 31, 32 and 33 each have different magnifications. Periodic alteration of light as already addressed with respect to the arguments above.

Claims 1-4, 10-12, and 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Taniguchi ('546).

Refer to Figures 1 and 2 of Taniguchi, for example.

Claim 1 sets forth: "An image projection system configured to enhance quality of an image on a screen, the system comprising:

an illumination source configured to produce light and direct light along an optical path (lamp 1); and

a time-varying focus device disposed in the optical path and configured to periodically alter focus of incident light to enhance quality of the image on the screen (turret plate 7)."

Claims 2 through 4 and 10 through 12 are met by the various fly eye lens systems shown in Figure 4. Turret plate 7 meets the limitations of the focus wheel set forth in applicant's claim 11.

With respect to claim 14, refer to any of Figures 3, 4A to 4C, 6 or 7A to 7C.

Claims 15, and 24, 26, and 27 are rejected under 35 U.S.C. 102(e) as being anticipated by Smith ('185).

Refer to Figures 1, 4, 5 and 6 of Smith, for example.

Claim 15 sets forth: "A display system configured to enhance the quality of an image on a screen, the system comprising:

an illumination source configured to direct light along an optical path (refer to projection display 10);

a spatial light modulator adapted to modulate the light into a plurality of discrete light beams, each light beam configured to project a light spot on the screen of a first size (light valve 14); and

a variable focus device disposed in the optical path and configured to periodically vary size of light spots on the screen between the first size and a second size such that a corresponding image portion on the screen rapidly and repeatedly alternates between a focused state and a defocused state to enhance the appearance of the image (refer to column 3, lines 43 through 67, and column 4, lines 1 through 33. Clearly the method of operation shown in Fig. 4 of Smith can be described as periodic, repeated, or cyclical.)."

With respect to claim 24, refer to figure 6 of Smith. The method claimed is inherent in the structure described by Smith. Furthermore, a method of focusing and defocusing of the device is discussed in column 4, lines 4 through 9. Also refer to the arguments applied to claim 15 addressing the use of the term "repeated" in the claim language.

Claims 26 and 27 are rejected for the same reasons already applied to rejected claim 24.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-14 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Belliveau ('080) in view of Chen ('478 B1).

Belliveau ('080) teaches a similar system that includes a rotating lens wheel (lenticular lens device 88) for selecting beam shape and a rotating color filter wheel (86), but the system of Belliveau does not specifically produce a patterned image. Refer to column 5, lines 41 through 54, wherein it is implied that the shaft mounted elements comprising the light projection device include rotating lenses and filters, but are not limited to those devices and therefore the device may support other shaft mounted devices that are known in the art. Column 3, lines 56 through 67, teach that multiple rotating wheels are a design feature of the device. Belliveau discusses as many as three wheels in his system.

Chen ('478 B1) teaches a projection light system for producing a patterned image and wherein a rotating pattern-changing structure (patterned disc 40) attached to a motor (30) allows for variations in the patterns projected by the device. Pattern change is a way of changing beam shape, thus both the light projection devices of Belliveau and Chen have a similar purpose in the art.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the teachings of '080 and '478 B1 to arrive at an image projection system that provides time-varying means with respect to color, beam shape and image pattern. The motivation for one having ordinary skill in the art to

develop such a system, one possibly having multiple wheels, would be to achieve a versatile light projection system such as that described in claims 1 through 14 and 23 of the present application.

Claims 19, 20 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith ('185 B1) in view of Iizuka ('333 B1).

Smith ('185 B1) teaches all of the elements of claim 19, except that a deformable mirror array is not specifically referred to. Referring to column 2, lines 16 through 20, Smith teaches that a light valve 14 may include an LCD, thus the light valve device is not limited to an LCD. The substitution of a deformable mirror array device for an LCD device is well known in the art.

Iizuka ('333 B1) teaches that either device, an LCD or a DMD™, may be substituted one for the other. Refer to the background of the invention.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to substitute a DMD™ for an LCD thus meeting the limitations of claims 19 and 20. The motivation for one having ordinary skill in the art to make such a substitution would be to achieve a state of the art device having the highest image quality desired.

With respect to claim 22, the DMD™ taught by Iizuka does not specify the details of the mirrors comprising the deformable mirror array. Because DMD™ is a trademark, the structure of the DMD™ is not limited to any particular type of mirror array.

Allowable Subject Matter

Claim 25 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: The prior art of record neither shows nor suggests a method having all of the elements of claim 25, and in particular a step "wherein periodically altering the focal lengths includes altering the focal length of sequential image frames".

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Owen U.S. Patent 5,795,058 teaches a color image projection apparatus.

Hewlett et al. 6,220,730 B1 teaches an illumination obscurement device.

Graham U.S. Patent 3,603,722 teaches a color television system.

Ishikawa et al. U.S. Patent 6,457,833 B1 teaches a digital micro mirror device and single-panel color projector using it.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melissa J Koval whose telephone number is (571) 272-2121. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Russell Adams can be reached on Monday through Thursday at (571) 272-2851.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (571) 272-2800.

MJK
February 7, 2004

RUSSELL ADAMS
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800